

DESCRIPTIONS OF TWO NEW SPECIES OF THE GENUS *ATHETIS* (LEPIDOPTERA, NOCTUIDAE, XYLENINAE) FROM XIZANG, CHINA

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Abstract Two new species of the genus *Athetis*, *A. motuoensis* and *A. hanmiensis*, are described from Xizang Autonomous Region, China were described. Key to the *Athetis* species from Xizang, and photos of adults and genitalia of both sexes for two new species are illustrated.

Key words Lepidoptera, Noctuidae, Xyleninae, *Athetis*, Xizang, China.

Introduction

The genus *Athetis* is a large cosmopolitan genus, which was placed to the subtribe *Athetina* of *Caradrini* in subfamily *Xyleninae* from *Amphyrinae* (s. l.) (Fibiger & Lafontaine, 2005; Lafontaine & Fibiger, 2006). It comprises about 211 described species to date (Poole, 1989; Kononenko, 2005a-c; Yoshimoto, 1994), among them about 150 species with diversity in South Palearctic and Oriental Region including Western China and Himalayan Region (Kononenko, 2005c). The genus can be divided into 18-20 species groups by the genital characters (Kononenko, 2005c).

So far, a total of 46 Chinese species of the genus have been reported by several researchers (Chen, 1999; Hua, 2005; Kononenko, 2005 a-c; Pool, 1989). However, the genus has been poorly investigated in Xizang Autonomous Region, despite of region's biogeographical importance, recently, only eight species has been reported (Chen, 1999; Hua, 2005) there. The genus is most diverse in mountain habitat in the southwest part of China during June to Aug.

In the present paper, we describe two new species, *Athetis motuoensis* and *A. hanmiensis*, belonging to the *fasciata* group of the genus. The genital characters of the *fasciata* group are as follows: male with apparently uncus; valva expanded terminally with bifurcated Ampula; process of costa extended beyond ventral margin of valva; carina hardly sclerotized; vesica with stronger curnuti band; female with well developed ostium plate, about 1/3-1/2 length of 8th and 9th segments; corpus bursae corrugate, with distinct signum band.

The materials examined in this study were collected by HUANG Hao, ZHOU Da-Kang and TANG Liang during their expeditions to Xizang Autonomous Region in 2005. The localities include mainly Motuo and Hanmi areas, close to Bhutan and Nepal. Type specimens of the two new species described herein are deposited in Northeast Forestry University (NEFU). The "TL" is

express type locality in this paper.

Taxonomic accounts

Genus *Athetis* Hübner, [1821] 1816

Type species: *Natua dasychira* Hübner, [1817] [TL: Europe], a junior subjective synonym of *Natua furvula* Hübner, [1808].

Key to the *Athetis* species from Xizang in China

1. Wingspan 33 mm or over 2
Wingspan less than 32 mm 4
2. Reniform spot large 3
Reniform spot small *A. immixta* Warren
3. Apex of valva truncated *A. hanmiensis* sp. nov.
Apex of valva smoothly rounded *A. motuoensis* sp. nov.
4. Hindwing with thin gray, pale or white, and marginal shade with brown 5
Hindwing with brown *A. fasciata* (Moore)
5. Reniform spot little broad, frame border common 6
Reniform spot narrow with thin ochre, and fame border black-brownish *A. flavitincta* Hampson
6. Subterminal line not darkened from costa to CuA₁ 7
Subterminal line appeared dark or black from costa to CuA₁ *A. gluteosa* (Treitschke)
7. Forewing not dark brown, hindwing common 8
Forewing dark brown; hindwing sunken nearby M₁ of outer margin *A. stellata* (Moore)
8. Forewing and hindwing not pale, orbicular and reniform spots brown 9
Forewing and hindwing pale, orbicular and reniform spots black *A. delecta* (Moore)
9. Orbicular and reniform spots large, clear; subterminal line double *A. himalayica* (Kollar)
Orbicular and reniform spots small, blurred; subterminal line common *A. fusca* (Leech)

Athetis motuoensis sp. nov. (Figs. 1, 3, 5, 7)

Diagnosis. This species is similar to *A. fasciata* (Moore, 1867), but can be distinguished by the following characters: medial line, basal and antemedial areas, subterminal and terminal areas of forewing dark brown. Main difference are found in the male genitalia (Table 1).

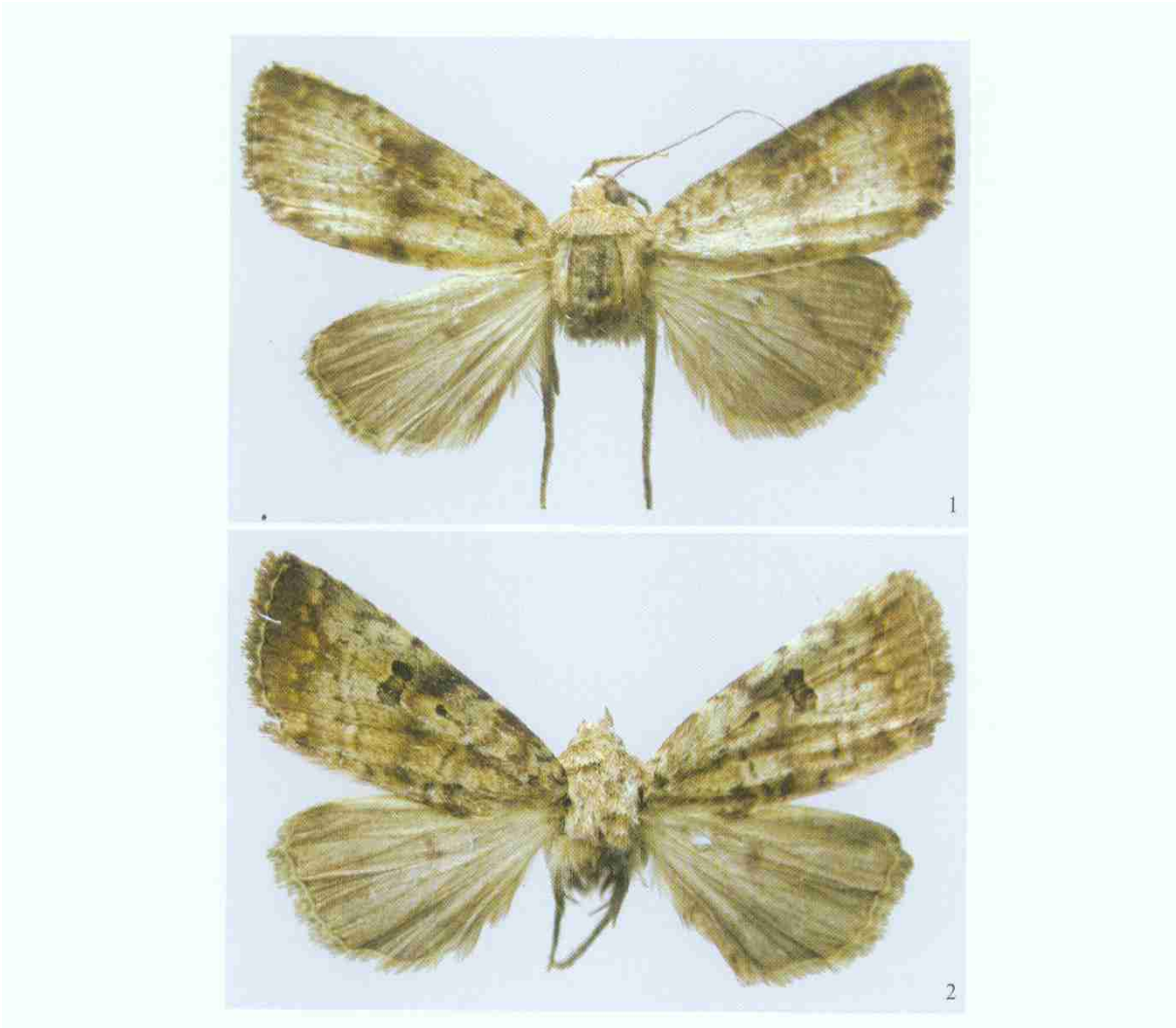
Description. Adult (Fig. 1). Wingspan 36 (35-39) mm. Head covered with brownish yellow scales; labial palpus with three segments, ratio of length for each

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Table 1. Comparison of male genital characteristics of *A. motuoensis* sp. nov and *A. fasciata* (Moore, 1867).

	<i>A. motuoensis</i> sp. nov.	<i>A. fasciata</i> (Moore)
Uncus	Broad , short	Slender , long
Cucullus	Narrow , round	Wide , straight
Costa process	Well developed , slender terminally , extending beyond the ventral margin of valva	Unconspicuous
Ampula	At distal 3/4 of valva , extend to apex of valva	At distal 6/7 of valva , extend to ventral side
Juxta	Ridge of apex part short and wide , middle part smooth ; bottom round	Ridge of apex part long and narrow ; middle part angled ; bottom pointed
Saccus	Narrow , V-shaped	Wide , U-shaped
Aedeagus	Gently curved , with a few small sclerotized teeth around tip , carina slightly sclerotized , long and slender	Rather straight ; smooth around the sclerotized tip , form v-shape ; carina sclerotized , short and broad
Viseca	Basal diverticulum moderate ; five strong and longer cornuti around the start part of the cornuti band	Basal divrticulum big with a small cornutus ; five strong and longer cornuti around the start part of the cornuti band , the 6-7 th cornuti moderate



Figs. 1-2. Adults of *Athetis*. 1. *A. motuoensis* sp. nov. 2. *A. hanniensis* sp. nov.

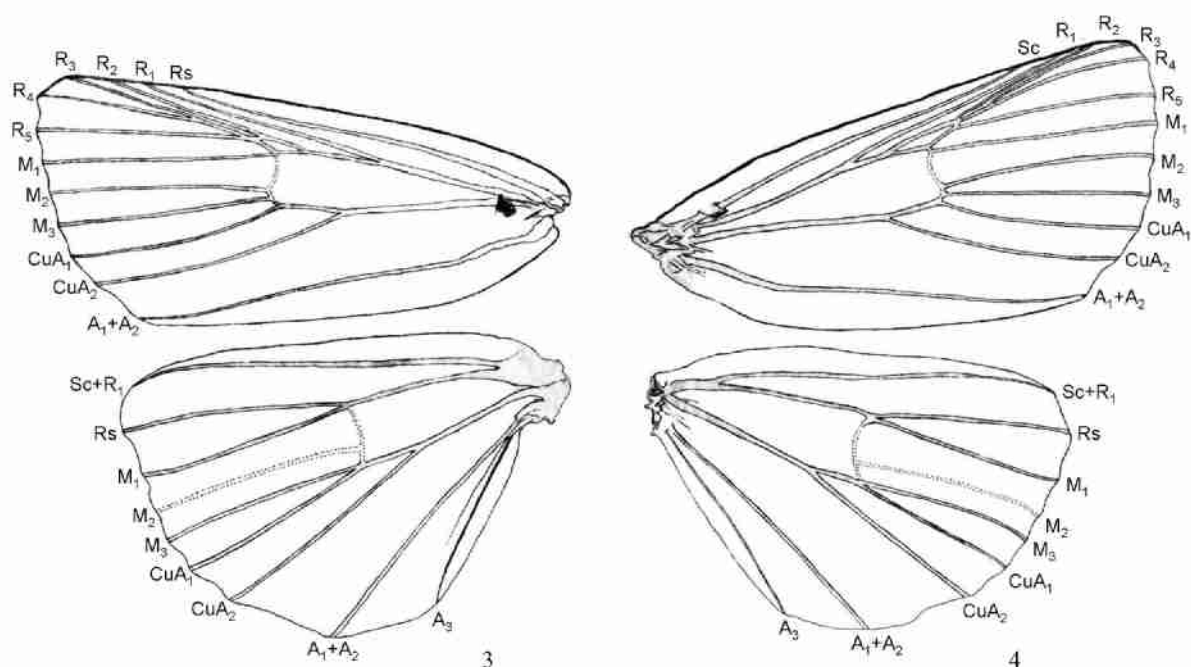
segment is 1 4 2 , with blackish scales dorsally , brownish yellow ventrally. Antenna 2/3 length of forewing. Thorax and abdomen brownish yellow tinged with dark brown in coloration. Forewing with triangular apex and rounded anal angle ; ground color brownish-gray ; darker in the outer area ; two rows of basal line distinct , dark

brownish gray ; antemedial line double , broad , incurved at Rs vein ; medial line dark brown , rather broader costally then abruptly narrowed beyond middle ; postmedial line thin , double ; subterminal line broader , double , outside line inserted with 5 small brown dots , outside light grayish red ; terminal line light grayish red ,

with brownish suffusion; orbicular spot forming a black dot; reniform spot distinct, blackish brown, outlined by a very thin pale borderline; ground color of hindwing darker than that of forewing, with crescent discal spot, darker than ground color; fringe light-reddish gray. Wing venation (Fig. 3): Sc reaching $3/4$ of costa of forewing; end of cell at half of forewing; one subcell formed by R_2 and R_{3-5} at apex of cell towards costa; R_1 starting at distal $1/3$ of cell; R_3 extended to apex of forewing; M_2 starting from the underside tip of cell, and close to M_3 ; top line of cell blurred, and incurved; M_3 close to M_2 and CuA_1 ; hindwing with M_2 indistinct; M_3 and CuA_1 stalked; M_2 close to M_3 .

Male genitalia (Figs. 5, 5a). Uncus developed,

slender triangular in shape. Tegumen large, with broad lobe. Vinculum U-shaped, with a long saccus. Valva similar to *A. vernalis*, but different in being rather slender and short with rounded and curved apex. Juxta plate-like, weakly sclerotized and tapered at apex. Process of costa well developed, slender terminally, extending to beyond the ventral margin of valva. Ampula developed at distal $3/4$ of valva, contracted medially, furcated apically, dorsal apex longer than the ventral one, ventral apex slender. Aedeagus gently curved, with a few small teeth around tip, carina slightly sclerotized. Vesica with a moderate diverticulum at basal one-fourth, and with a band of cornuti from basal $1/4$ to $3/4$, among them basal five stronger and longer.



Figs. 3-4. Wing venation of *Athetis*. 3. *A. motucensis* sp. nov. 4. *A. hanmiensis* sp. nov.

Female genitalia (Fig. 7). Papilla analis moderate, with numerous long hairs. Ostium bursae well sclerotized, 1.2 times as long as apophysis anterioris, large surrounded with broad antevaginal plate deeply emarginated area medially. Ductus bursae broad, flattened, sclerotized, and folded at connection with ostium. Ductus bursae wide, very short, slightly narrowed near bursa copulatrix. Bursa copulatrix rounded, sclerotized, contracted, covered with strongly folded wrinkles. Appendix bursae cylindrical, narrowed terminally, arising from the entrance of bursae copulatrix.

Holotype male, China, Xizang, Mêuo (29.2°N, 95.3°E; alt. 2100 m), 24-26 Aug. 2005 by HUANG Hao, ZHOU Da-Kang, TANG Liang, genitalia slide No. HHL-1012. Paratypes: 5 males, 3 females, same data as holotype, genitalia slide No. HHL-1011 (female), coll. NEFU.

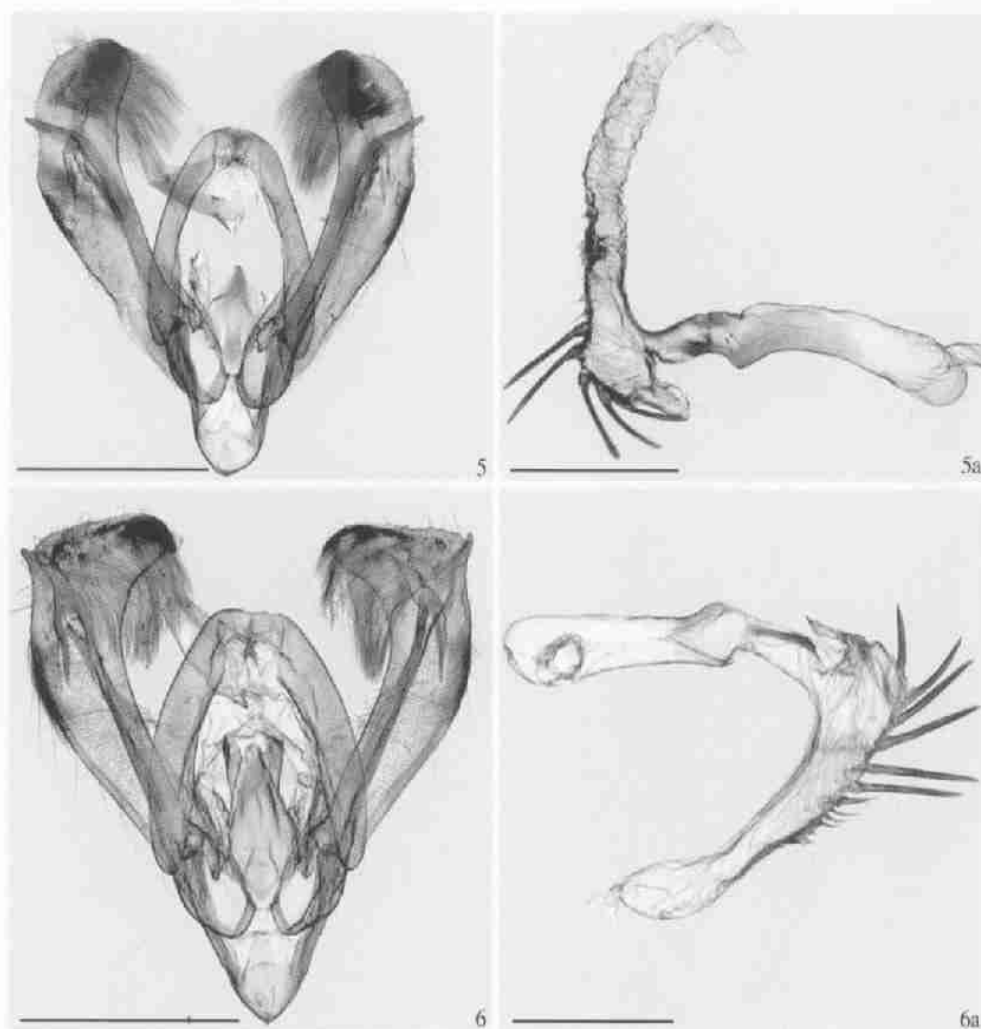
Distribution. China (Type locality).

Etymology. The specific name is derived from Motuo, type locality of the new species.

Athetis hanmiensis sp. nov. (Figs. 2, 4, 6, 8)

Diagnosis. This species is similar to *A. suffusa* (Yoshimoto, 1994), but can be distinguished by the following characters: forewing with red color; deeply brown at antemedial, postmedial and terminal areas. Main difference are found in the male genitalia (Table 2).

Description. Adult (Fig. 2). Wingspan 34 (33-36) mm. Head covered with brownish orange scales; labial palpus three segmented, ratio of length for each segment as 1:3:2, with reddish brown. Antenna $3/4$ as long as forewing, scape and dorsal part a bit pale. Thorax and abdomen with brownish yellow, with red color. Wing venation (Fig. 4): Sc reaching $10/13$ beyond base of

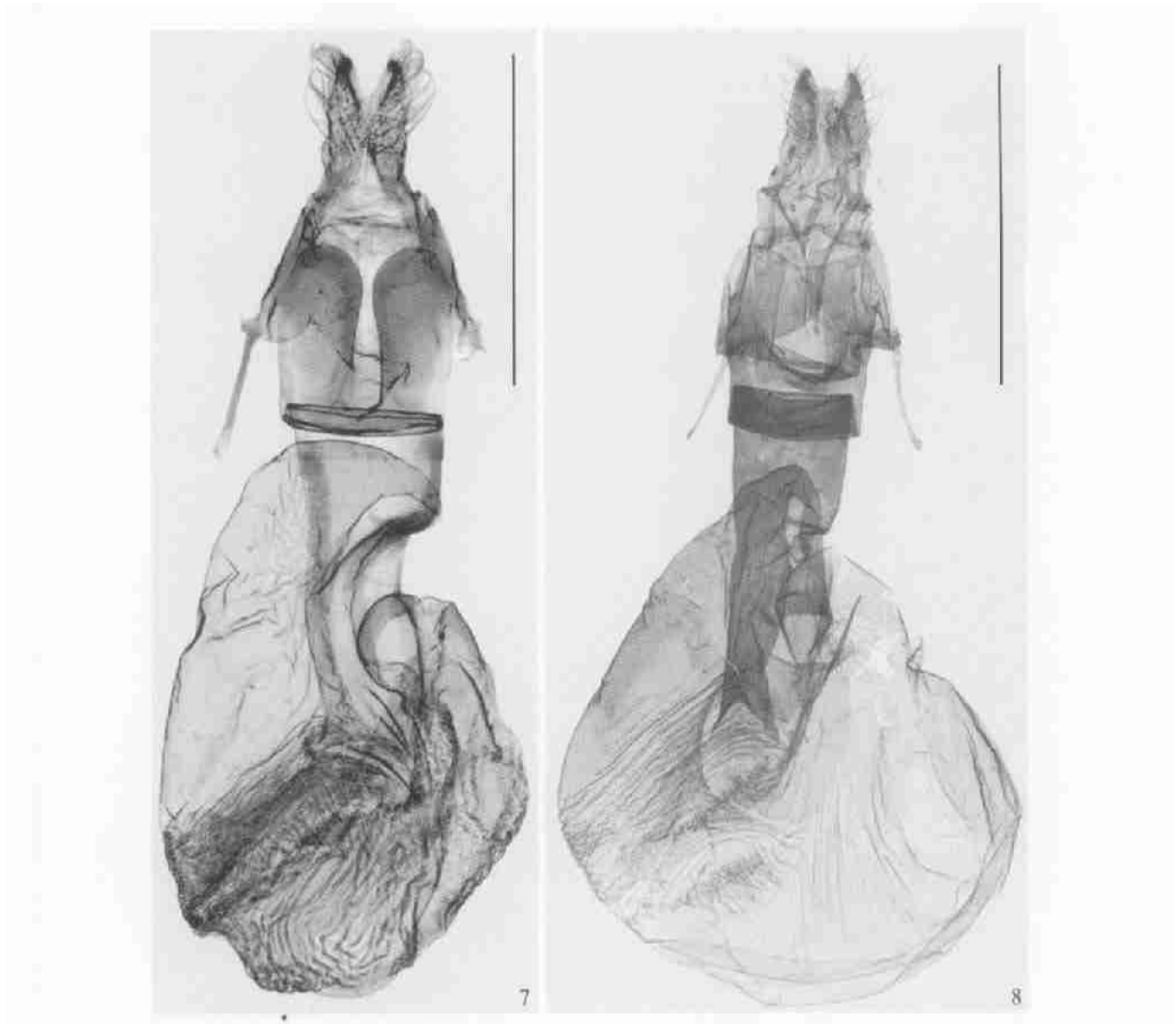


Figs. 5-6. Male genitalia of *Athetis*. 5. *A. motuoensis* sp. nov. 5a. Ditto, aedeagus. 6. *A. hanniersis* sp. nov. 6a. Ditto, aedeagus. Scale bars = 3 mm.

forewing; length of cell 1/2 that of forewing; one subcell formed by R_{2+3} and R_{4+5} at front apex of cell, and rather bigger than *motuoensis*; a small second subcell form by R_2 and R_3 at ahead subcell, and after it R_2 unite with R_3 ; R_1 starting from 1/3 beyond apex of cell; R_3 extending to apex, and very close with R_2 ; M_2 start nearly underside tip of cell, and close with M_3 ; top line of cell blurred, and incurved; M_3 start middle at M_2 and CuA_1 ; hindwing with indistinct M_2 and top line of cell; underside conjugation of top line at bifurcate of M_3 and CuA_1 ; M_2 close with M_3 ; cell length about 1/2 that of hindwing. Forewing with triangular apex and rounded anal angle; ground color dark grayish-brown; basal line broad, waved; antemedial line dark, narrow; medial line indistinct, broader, diffused; postmedial line brown, double, surrounded by a row of 7-8 small dots; subterminal line yellowish red, slender, waved; terminal line yellowish red, with brownish suffusion; orbicular

spot formed by one black dot; reniform spot distinct, grayish-black, outlined by a very thin whitish borderline. Hindwing ground color pale gray; discal spot narrow crescent shape, darker than ground color; fringe a bit paler.

Male genitalia (Figs. 6, 6a). Uncus slender, small, triangular in shape. Tegumen high, parallel, with broad lobe. Vinculum V-shaped, with long saccus. Valva like that of *A. fasciata*, slightly thick, expanded, straight, and strongly curved before apex. Juxta pyramid like. Process of costa slightly wider beyond terminal, exceeding ventral margin of apex. Ampula position at distal 3/4 of valva, shrunk at medial part, bifurcated at apex, dorsal apex slender and longer than ventral one. Aedeagus straight, carina sclerotized. One moderate diverticulum at basal one-fourth of vesica, with a short spine, and cornutus consisting of a row of spines, with six basal ones longer, tube abruptly contracted at



Figs. 7-8. Female genitalia of *Athetis*. 7. *A. motucensis* sp. nov. 8. *A. hanmiensis* sp. nov. Scale bars = 3 mm.

Table 2. Comparison of male genital characteristics of *A. hanmiensis* sp. nov and *A. suffusa* (Yoshimoto, 1994).

	<i>A. hanmiensis</i> sp. nov.	<i>A. suffusa</i> (Yoshimoto)
Uncus	Slender, long	Broad, short
Cucullus	Wide, straight	Narrow, round
Costa process	Developed, rather short; narrow terminally, extending beyond the ventral margin of valva	Unconspicuous
Ampula	At distal 3/5 of valva, extend to apex of valva	At distal 5/6 of valva, extend to cucullus side
Juxta	Big; ridge of apex part long and wide; middle part wide and bottom round	Small; ridge of apex part pulldown, middle part wide; bottom triquetrous
Saccus	Rather V-shaped	Rather U-shaped
Aedeagus	Gently slender, carina heavily sclerotized, long and slender	Common, carina sclerotized, short and broad
Viseca	Basal diverticulum moderate with a small cornutus; six strong and longer cornuti around the start part of the cornuti band	Basal divrticulum small and shrink; five slender and 1 moderate long cornuti around the start part of the cornuti band

terminal.

Female genitalia (Fig. 8). Papillae analis moderate. Ostium bursae well sclerotized, as long as apophysis anterioris, large with straight antevaginal plate with rectangular cut in the middle. Ductus bursae flatted, sclerotized, and one fold at 1/4 beyond the terminal.

Bursa copulatrix membranous, smooth, appendix bursae moderate. Conjugation of the copulatrix and appendix contracted, with wrinkle and two weakly sclerotized and small spine band.

Holotype male, China, Xizang, Hanmi, 2 000-2 100 m, 19-23 Aug. 2005, by HUANG Hao, ZHOU

Da-Kang, TANG Liang, genitalia slide No. HHL-1017. Paratypes: 4 males, 6 females, same data as holotype, genitalia slide No. HHL-1016 (female), coll. NEFU.

Distribution. China (Type locality).

Etymology. The species name is given by the type locality Hanmi.

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中国委夜蛾属二新种记述（鳞翅目，夜蛾科，木冬夜蛾亚科）

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摘要 通过对西藏夜蛾科标本的研究发现委夜蛾属 2 新种，墨脱委夜蛾 *Athetis motuensis* sp. nov. 和汉密委夜蛾 *Athetis hanmiensis* sp. nov.。文中提供西藏地区委夜蛾属的分种检索表和分种特征图及新种的详细描述。模式标本保存在东北林业大学标本室。

墨脱委夜蛾，新种 *Athetis motuensis* sp. nov. (图 1, 3, 5, 7)

本种外部形态上与条委夜蛾相似，仅前翅基部、内横线区、外横线区、外缘区和中横线暗褐色。主要区别于外生殖器上：爪形突宽短；抱器端窄而圆；抱器背延伸发达，超过抱器腹缘，末端较细；抱器内突在距抱握器基部 3/4 处出发，可达抱握器顶端；阳茎轭片脊部短而宽，中部平滑，下端部宽圆；囊形突较窄，略呈 V 形；阳茎逐渐弯曲，在末端着生有硬化的齿，龙骨稍硬化且细而长；阳茎端膜基囊中等大小，在角状突带的起始部位着生有 5 个长而粗大的角状突。

正模 雄性，西藏墨脱，海拔 2 100 m, 2005-08-24 ~ 26, 黄灏、周达康、唐亮采，玻片编号 HHL-1012。副模：5, 3, 其它采集资料同正模，雌性玻片编号 HHL-

1011。

词源：以新种模式产地命名。

汉密委夜蛾，新种 *Athetis hanmiensis* sp. nov. (图 2, 4, 6, 8)

本种外部形态上与 *A. suffusa* (Yoshimoto, 1994) 相似，仅前翅红褐色明显。主要区别于外生殖器上：爪形突相对大一些；抱器端宽而平直；抱器背延伸发达，末端较细，在抱器腹缘末端伸出；抱器内突在距抱握器基部 3/5 处出发，可达抱握器顶端；阳茎轭片较大，脊部长而宽，中下端部宽圆；囊形突较窄，呈明显的 V 形；阳茎逐渐变细，龙骨硬化重且细而长；阳茎端膜基囊中等大小，具有 1 个小角状突，在角状突带的起始部位着生有 6 个长而粗大的角状突。

正模 雄性，西藏汉密，海拔 2 000 m, 2005-08-19 ~ 23, 黄灏、周达康、唐亮采，玻片编号 HHL-1017。副模：4, 6, 其它采集资料同正模，雌性玻片编号 HHL-1016。

词源：以新种模式产地命名。

关键词 鳞翅目，夜蛾科，木冬夜蛾亚科，委夜蛾属，西藏，中国。

中图分类号 Q969.42